

# SEQUENCE LISTING

<110> Harrington, et al.

<120> Mammalian Flap Specific-Endonuclease

<130> 9584-017

<140> 09/586,744

<141> 2000-06-02

<160> 74

<170> PatentIn version 3.0

<210> 1

<211> 380

<212> PRT

<213> Artificial

<220>

<223> Peptide

<400> 1

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Ile Asp Ala Ser Met Ser Ile Tyr Gln Phe Leu Ile Ala Val Arg Gln
35           40           45
Gly Gly Asp Val Leu Gln Asn Glu Glu Gly Glu Thr Thr Ser His Leu
50           55           60

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Met	Gly	Met	Phe	Tyr	Arg	Thr	Ile	Arg	Met	Met	Glu	Asn	Gly	Ile	Lys	65	70	75	80
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Leu	Ala	Lys	Arg	Ser	Glu	Arg	Arg	Ala	Glu	Ala	Glu	Lys	Gln	Leu	Gln	100	105	110	
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Ala	Ser	Cys	Ala	Ala	Leu	Val	Lys	Ala	Gly	Lys	Val	Tyr	Ala	Ala	Ala	165	170	175	
Thr	Glu	Asp	Met	Asp	Cys	Leu	Thr	Phe	Gly	Ser	Pro	Val	Leu	Met	Arg	180	185	190	
His	Leu	Thr	Ala	Ser	Glu	Ala	Lys	Lys	Leu	Pro	Ile	Gln	Glu	Phe	His	195	200	205	
Leu	Ser	Arg	Ile	Leu	Gln	Glu	Leu	Gly	Leu	Asn	Gln	Glu	Gln	Phe	Val	210	215	220	
Asp	Leu	Cys	Ile	Leu	Leu	Gly	Ser	Asp	Tyr	Cys	Glu	Ser	Ile	Arg	Gly	225	230	235	240
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Glu	Glu	Ile	Val	Arg	Arg	Leu	Asp	Pro	Asn	Lys	Tyr	Pro	Val	Pro	Glu	260	265	270	
Asn	Trp	Leu	His	Lys	Glu	Ala	His	Gln	Leu	Phe	Leu	Glu	Pro	Glu	Val	275	280	285	
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Ile	Arg	Ser	Gly	Val	Lys	Arg	Leu	Ser	Lys	Ser	Arg	Gln	Gly	Ser	Thr	325	330	335	
Gln	Gly	Arg	Leu	Asp	Asp	Phe	Phe	Lys	Val	Thr	Gly	Ser	Leu	Ser	Ser	340	345	350	
Ala	Lys	Arg	Lys	Glu	Pro	Glu	Pro	Lys	Gly	Ser	Thr	Lys	Lys	Lys	Ala	355	360	365	

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Ile Asp Ala Ser Met Ser Ile Tyr Gln Phe Leu Ile Ala Val Arg Gln  
35 40 45  
Gly Gly Asp Val Leu Gln Asn Glu Glu Gly Glu Thr Thr Ser Leu Met  
50 55 60  
Gly Met Phe Tyr Arg Thr Ile Arg Met Glu Asn Gly Ile Lys Pro Val  
65 70 75 80  
Tyr Val Phe Asp Gly Lys Pro Pro Gln Leu Lys Ser Gly Glu Leu Ala  
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Lys Arg Ser Glu Arg Arg Ala Glu Ala Glu Lys Gln Leu Gln Gln Ala  
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Gln Glu Ala Gly Met Glu Glu Val Glu Lys Phe Thr Lys Arg Leu Val  
115 120 125  
Lys Val Thr Lys Gln His Asn Asp Glu Cys Lys His Leu Leu Ser Leu  
130 135 140  
Met Gly Ile Pro Tyr Leu Asp Ala Pro Ser Glu Ala Glu Ala Ser Cys  
145 150 155 160  
Ala Ala Leu Ala Lys Ala Gly Lys Val Tyr Ala Ala Ala Thr Glu Asp  
165 170 175  
Met Asp Cys Leu Thr Phe Gly Ser Pro Val Leu Met Arg His Leu Thr  
180 185 190  
Ala Ser Glu Ala Lys Lys Leu Pro Ile Gln Glu Phe His Leu Ser Arg  
195 200 205  
Val Leu Gln Glu Leu Gly Leu Asn Gln Glu Gln Phe Val Asp Leu Cys  
210 215 220

Ile Leu Leu Gly Ser Asp Tyr Cys Glu Ser Ile Arg Gly Ile Gly Ala  
225 230 235 240

Lys Arg Ala Val Asp Leu Ile Gln Lys His Lys Ser Ile Glu Glu Ile  
245 250 255

Val Arg Arg Leu Asp Pro Ser Lys Tyr Pro Val Pro Glu Asn Trp Leu  
260 265 270

His Lys Glu Ala Gln Gln Leu Phe Leu Glu Pro Glu Val Val Asp Pro  
275 280 285

Glu Ser Val Glu Leu Lys Trp Ser Glu Pro Asn Glu Glu Glu Leu Val  
290 295 300

Lys Phe Met Cys Gly Glu Lys Gln Phe Ser Glu Glu Arg Ile Arg Ser  
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Gly Val Lys Arg Leu Ser Lys Ser Arg Gln Gly Ser Thr Gln Gly Arg  
325 330 335

Leu Asp Asp Phe Phe Lys Val Thr Gly Ser Leu Ser Ser Ala Lys Arg  
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35 40 45  
Gln Asp Gly Gly Gln Leu Thr Asn Glu Ala Gly Glu Thr Thr Ser His  
50 55 60  
Leu Met Gly Met Phe Tyr Arg Thr Leu Arg Met Ile Asp Asn Gly Ile  
65 70 75 80  
Lys Pro Cys Tyr Val Phe Asp Gly Lys Pro Pro Asp Leu Lys Ser His  
85 90 95  
Glu Leu Thr Lys Arg Ser Ser Arg Arg Val Glu Thr Glu Lys Lys Leu  
100 105 110  
Ala Glu Ala Thr Thr Glu Leu Glu Lys Met Lys Gln Glu Arg Arg Leu  
115 120 125  
Val Lys Val Ser Lys Glu His Asn Glu Glu Ala Gln Lys Leu Leu Gly  
130 135 140  
Leu Met Gly Ile Pro Tyr Ile Ile Ala Pro Thr Glu Ala Glu Ala Gln  
145 150 155 160  
Cys Ala Glu Leu Ala Lys Lys Gly Lys Val Tyr Ala Ala Ala Ser Glu  
165 170 175  
Asp Met Asp Thr Leu Cys Tyr Arg Thr Pro Phe Leu Leu Arg His Leu  
180 185 190  
Thr Phe Ser Glu Ala Lys Lys Glu Pro Ile His Glu Ile Asp Thr Glu  
195 200 205  
Leu Val Leu Arg Gly Leu Asp Leu Thr Ile Glu Gln Phe Val Asp Leu  
210 215 220  
Cys Ile Met Leu Gly Cys Asp Tyr Cys Glu Ser Ile Arg Gly Val Gly  
225 230 235 240  
Pro Val Thr Ala Leu Lys Leu Ile Lys Thr His Gly Ser Ile Glu Lys

	245		250		255
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	260		265		270
Ile Pro Glu Asp Trp Pro Tyr Lys Gln Ala Arg Met Leu Phe Leu Asp					
	275		280		285
Pro Glu Val Ile Asp Gly Asn Glu Ile Asn Leu Lys Trp Ser Pro Pro					
	290		295		300
Lys Glu Lys Glu Leu Ile Glu Tyr Leu Cys Asp Asp Lys Lys Phe Ser					
	305		310		315
Glu Glu Arg Val Lys Ser Gly Ile Ser Arg Leu Lys Lys Gly Leu Lys					
		325		330	335
Ser Gly Ile Gln Gly Arg Leu Asp Gly Phe Phe Gln Val Val Pro Lys					
	340		345		350
Thr Lys Glu Gln Leu Ala Ala Ala Ala Lys Arg Ala Gln Glu Asn Lys					
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Lys Leu Asn Lys Asn Lys Asn Lys Val Thr Lys Gly Arg Arg					
	370		375		380

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<212> DNA

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<220>

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cagtttttaa ttgctgtaag acagcaagac ggtgggcagt tgaccaatga agccggtgaa	180
acaacgtcac acttgatggg tatgttttat aggacactga gaatgattga taacggtatc	240
aagccttggt atgtcttcga cggcaaacct ccagctttga aatctcatga gttgacaaag	300
cggtcttcaa gaagggtgga aacagaaaaa aaactggcag aggcaacaac agaattggaa	360
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tgtgctgagt tggcaaagaa gggaaaggtg tatgccgcag caagtgaaga tatggacaca	540



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 ccagtgcag ccttaaaatt gataaaaacg catggatcca tcgaaaaaat cgtggagttt 780  
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35 40 45

Ala Val Lys Asn Ser His Ile Thr Gly Phe Phe Arg Arg Ile Cys Lys  
50 55 60

Leu Leu Tyr Phe Gly Ile Arg Pro Val Phe Val Phe Asp Gly Gly Val  
65 70 75 80

Pro Val Leu Lys Arg Glu Thr Ile Arg Gln Arg Lys Glu Arg Arg Gln  
85 90 95

Gly Lys Arg Glu Ser Ala Lys Ser Thr Ala Arg Lys Leu Gln Gln Gln

100					105					110						
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Asn	Thr	Ser	Lys	Arg	Ile	Ser	Thr	Ala	Thr	Gly	Lys	Leu	Lys	Lys	Arg	
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<212> DNA

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cccgtattga aaagggaaac aatacggcag aggaaagaaa gaagacaggg aaaacgagag	300
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<213> Artificial

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Met Glu Ile His  
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ggc ctt gcc aaa cta att gct gat gtg gcc ccc agt gcc atc cgt gag 163  
Gly Leu Ala Lys Leu Ile Ala Asp Val Ala Pro Ser Ala Ile Arg Glu  
5 10 15 20

aat gac atc aag agc tac ttt ggt cgc aaa gtg gcc atc gat gcc tcc 211  
Asn Asp Ile Lys Ser Tyr Phe Gly Arg Lys Val Ala Ile Asp Ala Ser  
25 30 35

atg agc atc tac cag ttc ctg att gct gtt cgt cag ggt ggg gat gtg 259  
Met Ser Ile Tyr Gln Phe Leu Ile Ala Val Arg Gln Gly Gly Asp Val  
40 45 50

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55 60 65

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70 75 80

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85 90 95 100

agg cgc gcc gag gct gag aag caa ctg cag cag gct cag cag gct ggg 451  
Arg Arg Ala Glu Ala Glu Lys Gln Leu Gln Gln Ala Gln Gln Ala Gly  
105 110 115

atg gag gag gag gtg gag aag ttc acc aag agg ctc gtg aag gtc acc 499  
Met Glu Glu Glu Val Glu Lys Phe Thr Lys Arg Leu Val Lys Val Thr  
120 125 130

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cct tac ctt gat gca ccc agc gag gca gag gcc agc tgt gct gcc ctg Pro Tyr Leu Asp Ala Pro Ser Glu Ala Glu Ala Ser Cys Ala Ala Leu 150 155 160	595
gca aag gct ggc aaa gtc tat gct gcg gcc acg gag gac atg gac tgc Ala Lys Ala Gly Lys Val Tyr Ala Ala Ala Thr Glu Asp Met Asp Cys 165 170 175 180	643
ctc act ttt ggc agc ccc gtg cta atg cga cac tta act gcc agt gag Leu Thr Phe Gly Ser Pro Val Leu Met Arg His Leu Thr Ala Ser Glu 185 190 195	691
gcc aag aag ctg ccc atc caa gag ttc cat ctg agc cgc gtc ctg cag Ala Lys Lys Leu Pro Ile Gln Glu Phe His Leu Ser Arg Val Leu Gln 200 205 210	739
gag ctg ggt ctg aac cag gag cag ttt gtg gat ctg tgc atc ctg ctg Glu Leu Gly Leu Asn Gln Glu Gln Phe Val Asp Leu Cys Ile Leu Leu 215 220 225	787
ggt agc gac tac tgc gag agc atc cgt ggc att ggc gcc aag cgg gct Gly Ser Asp Tyr Cys Glu Ser Ile Arg Gly Ile Gly Ala Lys Arg Ala 230 235 240	835
gtg gat ctc atc cag aaa cat aag agc atc gag gag atc gtg agg cgg Val Asp Leu Ile Gln Lys His Lys Ser Ile Glu Glu Ile Val Arg Arg 245 250 255 260	883
ctg gac ccc agc aag tac ccc gtt cca gag aac tgg ctc cac aag gaa Leu Asp Pro Ser Lys Tyr Pro Val Pro Glu Asn Trp Leu His Lys Glu 265 270 275	931
gcc cag cag ctc ttc ctg gag cca gaa gta gtg gac cca gag tct gtg Ala Gln Gln Leu Phe Leu Glu Pro Glu Val Val Asp Pro Glu Ser Val 280 285 290	979
gag ctg aag tgg agc gag cca aat gaa gaa gag ttg gtc aaa ttt atg Glu Leu Lys Trp Ser Glu Pro Asn Glu Glu Glu Leu Val Lys Phe Met 295 300 305	1027
tgt ggt gaa aag cag ttt ttt gaa gag cga att cgc agt ggg gtc aag Cys Gly Glu Lys Gln Phe Phe Glu Glu Arg Ile Arg Ser Gly Val Lys 310 315 320	1075
cgg ctg agt aag agc cgc cag ggc agc acc cag gga cgc ctc gat gat Arg Leu Ser Lys Ser Arg Gln Gly Ser Thr Gln Gly Arg Leu Asp Asp 325 330 335 340	1123
ttc ttc aag gtg aca ggc tca ctc tcc tca gct aag cgc aag gag cca Phe Phe Lys Val Thr Gly Ser Leu Ser Ser Ala Lys Arg Lys Glu Pro 345 350 355	1171

gaa ccc aag ggg cct gct aag aag aaa gca aag act ggg gga gcg ggg 1219  
 Glu Pro Lys Gly Pro Ala Lys Lys Lys Ala Lys Thr Gly Gly Ala Gly  
 360 365 370

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 Lys Phe Arg Arg Gly Lys  
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accccaggct gtctatctgt tttgtacctt cggetgcagc acatccctct tgtccctcgt 1327

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agagaagtct ggctgacaac agatttagta ctgaccagct gatttttgtg ggcagaaatt 1747

tgaacttgct gcctgctgag tccagtagtt gtgcaggag tgagatggca gtgtttaagt 1807

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ggcaaaggca ttaagtgtgc cactgacctg tgcttccaag tgatgtttctg acagcctttc 1927

tgaggcaatc aattgaattg aggttttggg agaagaaact gttgttcata ggctattttct 1987

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<211> 378

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 20 25 30

Ile Asp Ala Ser Met Ser Ile Tyr Gln Phe Leu Ile Ala Val Arg Gln  
 35 40 45

Gly Gly Asp Val Leu Gln Asn Glu Glu Gly Glu Thr Thr Ser Leu Met  
 50 55 60

Gly Met Phe Tyr Arg Thr Met Arg Met Glu Asn Gly Ile Lys Pro Val  
 65 70 75 80

Tyr Val Phe Asp Gly Lys Pro Pro Gln Leu Lys Ser Gly Glu Leu Ala  
 85 90 95

Lys Arg Ser Glu Arg Arg Ala Glu Ala Glu Lys Gln Leu Gln Gln Ala  
 100 105 110

Gln Gln Ala Gly Met Glu Glu Glu Val Glu Lys Phe Thr Lys Arg Leu  
 115 120 125

Val Lys Val Thr Lys Gln His Asn Asp Glu Cys Lys His Leu Leu Ser  
 130 135 140

Leu Met Gly Ile Pro Tyr Leu Asp Ala Pro Ser Glu Ala Glu Ala Ser  
 145 150 155 160

Cys Ala Ala Leu Ala Lys Ala Gly Lys Val Tyr Ala Ala Ala Thr Glu  
 165 170 175

Asp Met Asp Cys Leu Thr Phe Gly Ser Pro Val Leu Met Arg His Leu  
 180 185 190

Thr Ala Ser Glu Ala Lys Lys Leu Pro Ile Gln Glu Phe His Leu Ser  
 195 200 205

Arg Val Leu Gln Glu Leu Gly Leu Asn Gln Glu Gln Phe Val Asp Leu  
 210 215 220

Cys Ile Leu Leu Gly Ser Asp Tyr Cys Glu Ser Ile Arg Gly Ile Gly  
 225 230 235 240

Ala Lys Arg Ala Val Asp Leu Ile Gln Lys His Lys Ser Ile Glu Glu  
 245 250 255

Ile Val Arg Arg Leu Asp Pro Ser Lys Tyr Pro Val Pro Glu Asn Trp  
 260 265 270

Leu His Lys Glu Ala Gln Gln Leu Phe Leu Glu Pro Glu Val Val Asp  
275 280 285

Pro Glu Ser Val Glu Leu Lys Trp Ser Glu Pro Asn Glu Glu Glu Leu  
290 295 300

Val Lys Phe Met Cys Gly Glu Lys Gln Phe Phe Glu Glu Arg Ile Arg  
305 310 315 320

Ser Gly Val Lys Arg Leu Ser Lys Ser Arg Gln Gly Ser Thr Gln Gly  
325 330 335

Arg Leu Asp Asp Phe Phe Lys Val Thr Gly Ser Leu Ser Ser Ala Lys  
340 345 350

Arg Lys Glu Pro Glu Pro Lys Gly Pro Ala Lys Lys Lys Ala Lys Thr  
355 360 365

Gly Gly Ala Gly Lys Phe Arg Arg Gly Lys  
370 375

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<211> 30

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<220>

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30

<210> 12

<211> 13

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<223> Peptide

<400> 12

Gln Lys Arg Glu Ser Ala Lys Ser Thr Ala Arg Ala Arg  
1 5 10

<210> 13

<211> 26

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<220>

<223> Oligonucleotide

<400> 13  
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26

<210> 14

<211> 28

<212> DNA

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<220>

<223> Oligonucleotide

<400> 14  
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28

<210> 15

<211> 22

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<213> Artificial

<220>

<223> Peptide

<400> 15

Ile Gln Gly Leu Ala Lys Leu Ile Ala Asp Val Ala Pro Ser Ala Ile  
1 5 10 15

Arg Glu Asn Asp Ile Lys  
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<211> 16

<212> PRT

<213> Artificial

<220>

<223> Peptide

<400> 16

Ser Met Ser Ile Tyr Gln Phe Leu Ile Ala Val Arg Gln Gly Gly Asp  
1 5 10 15

<210> 17

<211> 22

<212> PRT

<213> Artificial

<220>

<223> Peptide

<400> 17

Thr Ser His Leu Met Gly Met Phe Tyr Arg Thr Ile Arg Met Met Glu  
1 5 10 15

Asn Gly Ile Lys Pro Val  
20

<210> 18

<211> 24

<212> PRT

<213> Artificial

<220>

<223> Peptide

<400> 18

Gly Lys Pro Pro Gln Leu Lys Ser Gly Glu Leu Ala Lys Arg Ser Glu  
1 5 10 15

Arg Arg Ala Glu Ala Glu Lys Gln  
20

<210> 19

<211> 20

<212> PRT

<213> Artificial

<220>

<223> Peptide

<400> 19

Glu Gln Glu Val Glu Lys Phe Thr Lys Arg Leu Val Lys Val Thr Lys  
1 5 10 15

Gln His Asn Asp  
20

<210> 20

<211> 25

<212> PRT

<213> Artificial

<220>

<223> Peptide

<400> 20

Leu Leu Ser Leu Met Gly Ile Pro Tyr Leu Asp Ala Pro Ser Glu Ala  
1 5 10 15

Glu Ala Ser Cys Ala Ala Leu Val Lys  
20 25

<210> 21

<211> 23

<212> PRT

<213> Artificial

<220>

<223> Peptide

<400> 21

Leu Thr Phe Gly Ser Pro Val Leu Met Arg His Leu Thr Ala Ser Glu  
1 5 10 15

Ala Lys Lys Leu Pro Ile Gln  
20

<210> 22

<211> 21

<212> PRT

<213> Artificial

<220>

<223> Peptide

<400> 22

Ile Leu Gln Glu Leu Gly Leu Asn Gln Glu Gln Phe Val Asp Leu Cys  
1 5 10 15

Ile Leu Leu Gly Ser  
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<210> 23

<211> 24

<212> PRT

<213> Artificial

<220>

<223> Peptide

<400> 23

Arg Gly Ile Gly Pro Lys Arg Ala Val Asp Leu Ile Gln Lys His Lys  
1 5 10 15

Ser Ile Glu Glu Ile Val Arg Arg  
20

<210> 24

<211> 20

<212> PRT

<213> Artificial

<220>

<223> Peptide

<400> 24

Pro Glu Asn Trp Leu His Lys Glu Ala His Gln Leu Phe Leu Glu Pro  
1 5 10 15

Glu Val Leu Asp  
20

<210> 25

<211> 22

<212> PRT

<213> Artificial

<220>

<223> Peptide

<400> 25

Trp Ser Glu Pro Asn Glu Glu Glu Leu Ile Lys Phe Met Cys Gly Glu  
1 5 10 15

Lys Gln Phe Ser Glu Glu  
20

<210> 26

<211> 22

<212> PRT

<213> Artificial

<220>

<223> Peptide

<400> 26

Ser Lys Ser Arg Gln Gly Ser Thr Gln Gly Arg Leu Asp Asp Phe Phe  
1 5 10 15

Lys Val Thr Gly Ser Leu  
20

<210> 27

<211> 16

<212> PRT

<213> Artificial

<220>

<223> Peptide

<400> 27

Lys Glu Pro Glu Pro Lys Gly Ser Thr Lys Lys Lys Ala Lys Thr Gly  
1 5 10 15

<210> 28

<211> 1144

<212> DNA

<213> Artificial

<220>

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cagttcctga ttgctgttcg ccagggtggg gatgtgctgc agaatgagga ggggtgagacc	180
accagccacc tgatgggcat gttctaccgc accattcgca tgatggagaa cggcatcaag	240
cccgtgtatg tctttgatgg caagccgcca cagctcaagt caggcgagct ggccaaacgc	300
agtgagcggc gggctgaggc agagaagcag ctgcagcagg ctcaggctgc tggggccgag	360
caggaggtgg aaaaattcac taagcggctg gtgaaggtca ctaagcagca caatgatgag	420

tgcaaacatc tgctgagcct catgggcatc ccttatcttg atgcacccag tgaggcagag	480
gccagctgtg ctgccctggt gaaggctggc aaagtctatg ctgcggctac cgaggacatg	540
gactgcctca ccttcggcag ccctgtgcta atgcgacacc tgactgccag tgaagccaaa	600
aagctgccaa tccaggaatt ccacctgagc cggattctgc aggagctggg cctgaaccag	660
gaacagtttg tggatctgtg catcctgcta ggcagtgact actgtgagag tatccggggt	720
attgggcca agcgggctgt ggacctcatc cagaagcaca agagcatcga ggagatcgtg	780
cggcgacttg accccaacaa gtacctgtg ccagaaaatt ggctccacaa ggaggctcac	840
cagctcttct tggaacctga ggtgctggac ccagagtctg tggagctgaa gtggagcgag	900
ccaaatgaag aagagctgat caagttcatg tgtggtgaaa agcagttctc tgaggagcga	960
atccgcagtg gggtaagag gctgagtaag agccgccaaag gcagcaccca gggccgcctg	1020
gatgatttct tcaaggtgac cggctcactc tcttcagcta agcgcaagga gccagaacct	1080
aagggatcca ctaagaagaa ggcaaagact ggggcagcag ggaagtttaa aaggggaaaa	1140
taaa	1144

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<211> 45

<212> DNA

<213> Artificial

<220>

<223> Oligonucleotide

<400> 29

tgggaattca aggcctggcc aaactaattg ctgatgtggc cccca

45

<210> 30

<211> 35

<212> DNA

<213> Artificial

<220>

<223> Oligonucleotide

<400> 30  
tgacatcaag agctactttg gccgtaaggt ggcca

35

<210> 31

<211> 37

<212> DNA

<213> Artificial

<220>

<223> Oligonucleotide

<400> 31  
tgcctctatg agcatttatc agttcctgat tgctggt

37

<210> 32

<211> 33

<212> DNA

<213> Artificial

<220>

<223> Oligonucleotide

<400> 32  
ggatgtgctg cagaatgagg agggtgagac cac

33

<210> 33

<211> 39

<212> DNA

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<400> 33  
tgggcatggt ctaccgcacc attcgcatga tggagaacg

39



<210> 34

<211> 41

<212> DNA

<213> Artificial

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<223> Oligonucleotide

<400> 34

ctttgatggc aagccgccac agctcaagtc aggcgagctg g

41

<210> 35

<211> 32

<212> DNA

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<220>

<223> Oligonucleotide

<400> 35

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32

<210> 36

<211> 35

<212> DNA

<213> Artificial

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<223> Oligonucleotide

<400> 36

aattcactaa gcggtggtg aaggtcacta agcag

35

<210> 37

<211> 32

<212> DNA

<213> Artificial

<220>

<223> Oligonucleotide

<400> 37

atgatgagtg caaacatctg ctgagcctca tg

32

<210> 38

<211> 37

<212> DNA

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atcccttatc ttgatgcacc cagtgaggca gaggcca

37

<210> 39

<211> 44

<212> DNA

<213> Artificial

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<400> 39

gccctggtga aggctggcaa agtctatgct gcggctaccg agga

44

<210> 40

<211> 33

<212> DNA

<213> Artificial

<220>

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<400> 40

cttcggcagc cctgtgctaa tgcgacacct gac

33

<210> 41

<211> 36

<212> DNA

<213> Artificial

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<223> Oligonucleotide

<400> 41

caggaattcc acctgagccg gattctgcag gagctg

36

<210> 42

<211> 36

<212> DNA

<213> Artificial

<220>

<223> Oligonucleotide

<400> 42

cctgaaccag gaacagtttg tggatctgtg catcct

36

<210> 43

<211> 41

<212> DNA

<213> Artificial

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<223> Oligonucleotide

<400> 43  
aggcagtgac tactgtgaga gtatccgggg tattgggccc a

41

<210> 44

<211> 39

<212> DNA

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<220>

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<400> 44  
ggctgtggac ctcattccaga agcacaagag catcgagga

39

<210> 45

<211> 40

<212> DNA

<213> Artificial

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<223> Oligonucleotide

<400> 45  
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40

<210> 46

<211> 38

<212> DNA

<213> Artificial

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<223> Oligonucleotide

<400> 46  
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38

<210> 47

<211> 41

<212> DNA

<213> Artificial

<220>

<223> Oligonucleotide

<400> 47

gatcaagttc atgtgtggtg aaaagcagtt ctctgaggag c

41

<210> 48

<211> 38

<212> DNA

<213> Artificial

<220>

<223> Oligonucleotide

<400> 48

atccgcagtg gggtaagag gctgagtaag agccgccca

38

<210> 49

<211> 32

<212> DNA

<213> Artificial

<220>

<223> Oligonucleotide

<400> 49

gcagcaccga gggccgctg gatgatttct tc

32

<210> 50

<211> 34

<212> DNA

<213> Artificial

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34

<210> 56

<211> 16

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<220>

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<400> 56  
cacgttgact accgtc

16

<210> 57

<211> 25

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<220>

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<400> 57  
gtaggagatg tcccttgatg aattc

25

<210> 58

<211> 16

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<400> 58  
cagcaacgca agcttg

16

<210> 59

<211> 19

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<223> Oligonucleotide

<400> 59  
tagcaggctg caggtcgac

19



<210> 60

<211> 30

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<400> 60

gtcgacctgc agcccaagct tgcgttgctg

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<210> 62

<211> 33

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<220>

<223> Oligonucleotide

<400> 63

tgctagagat tttccacat

19

<210> 64

<211> 40

<212> DNA

<213> Artificial

<220>

<223> Polynucleotide

<400> 64

ggccgtatct gggtcgaatt catcaaggga catctcctac

40

<210> 65

<211> 35

<212> DNA

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35

<210> 66

<211> 24

<212> DNA

<213> Artificial

<220>

<223> Polynucleotide

<400> 66

gtaggagatg tcccttgatg aatt

24

<210> 67

<211> 24

<212> DNA

<213> Artificial

<220>

<223> Polynucleotide

<400> 67

gtaggagatg tcccttgatg attc

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<210> 68

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gtaggagatg tcccttgatg

20

<210> 69

<211> 26

<212> DNA

<213> Artificial

<220>

<223> Polynucleotide

<400> 69  
gtaggagatg tcccttgatg aattcc

26

<210> 70

<211> 35

<212> DNA

<213> Artificial

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<400> 70  
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35

<210> 71

<211> 24

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<400> 71  
gtaggagatg tcccttgatg aatt

24

<210> 72

<211> 16

<212> DNA

<213> Artificial

<220>

<223> Polynucleotide

<400> 72  
cgaaccaga tacggc

16

<210> 73

<211> 40

<212> DNA

<213> Artificial

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<400> 73

gtaggagatg tcccttgatg aattcgaacc cagatacggc

40

<210> 74

<211> 19

<212> DNA

<213> Artificial

<220>

<223> Polynucleotide

<400> 74

tgctagagat tttccacat

19